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# MASTER FILE

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## DSSD CENSUS 2000 PROCEDURES AND OPERATIONS MEMORANDUM SERIES R-16

### MEMORANDUM FOR

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### Subject:

Accuracy and Coverage Evaluation Survey: Initial Listing Sample  
Results

## I. Introduction

The Accuracy and Coverage Evaluation (A.C.E.) survey will be used as a quality check for Census 2000. One of the first steps in the A.C.E. is the selection of the sample of block clusters. A list of housing units will be created independently of the census address list in these block clusters. As a precursor of the listing sample selection, census collection blocks are clustered together, and the resulting block clusters are stratified based on the preliminary count of housing units in each block cluster. The listing sample is selected using variable sampling rates for each sampling stratum. This memorandum documents some initial results from the block clustering operation and the listing sample selection generated during the verification process conducted by the Sample Design Team. A future memorandum will provide more detailed results.

## II. Results

Table 1 in the attachment provides summary statistics for the nation and Puerto Rico from the block clustering operation. The 1998 Dress Rehearsal clustering rules specified that small census blocks, those with zero to two housing units, remain block clusters by themselves. This rule led to a large number of small block clusters that had high weights after small block subsampling, meaning these small block clusters could exert undue influence on the final population and variance estimates. Under the Census 2000 A.C.E. clustering procedure, small census blocks were eligible to be clustered with adjacent census blocks that contained housing units. This change in the treatment of small census blocks had an enormous impact on the number of small block clusters, which was

reduced from nearly three million to about one million, approximately 65 percent, from the number that would have occurred using the dress rehearsal clustering rules. In addition, a primary goal of A.C.E. clustering was to create medium block clusters that average approximately 30 housing units, and this goal was achieved.

Table 2 gives summary statistics for the nation for the listing sample by sampling stratum. The small sampling stratum consists of block clusters that contain zero to two preliminary housing units, including those that are on American Indian reservations (AIRs). The medium stratum has block clusters with 3 to 79 housing units, and the large stratum has 80 or more housing units. The AIR sampling stratum includes all medium and large block clusters that are on AIRs. It is important to note that the final number of block clusters selected was lower than the originally expected 30,000 due to workload constraints on the number of housing units that could be listed. Block cluster sampling rates in the large sampling stratum were adjusted during the sample selection process based on prespecified workload constraints. This lower number of block clusters should not have any bearing on the A.C.E. reliability because of the planned A.C.E. cluster reduction following the listing of these block clusters.

Table 3 in the attachment lists the block cluster universe size and sample size by sampling stratum for each state, the District of Columbia, Puerto Rico, and the nation. Table 4 provides similar information for the number of housing units. Note that these are preliminary housing unit counts based on an early version of the Master Address File. The results from the block canvassing operation were not yet available at the time of clustering. Therefore, these preliminary housing unit counts will differ from the actual housing unit counts.

Table 5 gives the listing sample weights by sampling stratum for each state, the District of Columbia, and Puerto Rico. These weights are defined as the inverse of the probability of selection of each block cluster in each sampling stratum. The final A.C.E. weights will be higher for most states and strata due to operations such as the A.C.E. reduction, large block subsampling, and small block subsampling.

cc: DSSD Census 2000 Procedures and Operations Memorandum Series Distribution List  
A.C.E. Implementation Team Leaders Distribution List  
Statistical Design Team Leaders Distribution List  
Sample Design Team

Table 1. Accuracy and Coverage Evaluation: Block Cluster Summary Statistics<sup>1</sup>

	Preliminary Number of Housing Units			Total
	0 - 2	3 - 79	80+	
Number of Census Blocks <sup>2</sup>	2,968,956	4,009,159	244,906	7,223,021
Number of Block Clusters	1,029,185	2,485,734	252,009	3,766,928
Number of Blocks per Cluster <sup>3</sup>	1.3	2.2	1.5	1.9
Number of Housing Units per Cluster	0.3	29.2	181.9	31.5

<sup>1</sup>The United States and Puerto Rico are included in these summary statistics.

<sup>2</sup>Count of census collection blocks before clustering and before suffixing. Does not include water blocks or census blocks in Remote Alaska.

<sup>3</sup>These numbers are not the first row divided by the second row. They are the number of census blocks in each block cluster size category divided by the number of block clusters in each category. For example, if two census blocks with 40 housing units collapse to form an 80 housing unit block cluster, those two census blocks are counted in the 80+ category for the Number of Blocks per Cluster computation. Block clustering can combine across categories; therefore, the first and second rows are not consistent.

Table 2. Accuracy and Coverage Evaluation: National Listing Sample Summary Statistics

Sampling Stratum	Universe		Listing Sample		
	Block Clusters	Housing Units <sup>1</sup>	Block Clusters	Housing Units <sup>1</sup>	HUs per Cluster
Small	1,023,384	330,200	5,000	2,400	0.5
Medium	2,451,081	71,577,000	15,393	438,600	28.5
Large	247,810	45,091,000	8,388	1,539,800	183.6
American Indian Reservation	12,618	370,800	355	8,620	24.3
Total <sup>2</sup>	3,734,893	117,369,000	29,136	1,989,420	68.3

<sup>1</sup>Housing unit counts are preliminary and will differ from actual housing unit counts.

<sup>2</sup>Totals do not include Puerto Rico.

Table 3. Accuracy and Coverage Evaluation: State Block Cluster Counts by Sampling Stratum

State	Universe					Listing Sample				
	Small	Medium	Large	AIR	Total	Small	Medium	Large	AIR	Total
Alabama	13,026	48,281	3,752	0	65,059	116	286	109	0	511
Alaska	2,008	4,636	583	18	7,245	20	190	137	1	348
Arizona	36,836	38,432	4,081	2,356	81,705	86	269	180	113	648
Arkansas	12,042	30,780	2,237	0	45,059	90	353	101	0	544
California	85,912	208,615	32,351	796	327,674	184	1,442	1,311	11	2,948
Colorado	24,219	37,830	3,588	177	65,814	83	293	157	2	535
Connecticut	2,757	27,864	4,133	0	34,754	20	211	159	0	390
Delaware	760	7,074	715	0	8,549	20	243	156	0	419
District of Columbia	508	2,928	963	0	4,399	20	132	247	0	399
Florida	37,335	127,194	15,348	32	179,909	145	259	230	1	635
Georgia	16,814	63,169	7,423	0	87,406	154	220	162	0	536
Hawaii	6,123	5,205	1,150	0	12,478	20	103	161	0	284
Idaho	30,979	13,675	776	475	45,905	54	312	75	6	447
Illinois	16,286	106,430	10,526	0	133,242	185	281	140	0	606
Indiana	8,560	64,849	4,213	0	77,622	140	202	51	0	393
Iowa	6,982	35,719	1,601	0	44,302	147	242	53	0	442
Kansas	21,880	32,323	1,497	26	55,726	193	237	63	1	494
Kentucky	10,563	37,493	4,200	0	52,256	96	268	135	0	499
Louisiana	21,746	44,985	3,578	0	70,309	65	407	155	0	627
Maine	7,302	17,195	1,243	20	25,760	38	226	79	1	344
Maryland	4,558	34,254	5,389	0	44,201	36	177	175	0	388
Massachusetts	5,385	57,127	7,033	0	69,545	38	229	140	0	407
Michigan	15,871	101,824	7,724	410	125,829	122	268	104	5	499
Minnesota	13,301	50,285	3,796	589	67,971	141	208	83	10	442
Mississippi	14,299	29,892	1,876	54	46,121	81	303	77	3	464
Missouri	14,177	57,714	4,879	0	76,770	162	200	71	0	433
Montana	29,982	11,990	549	951	43,472	67	333	67	24	491
Nebraska	13,314	21,937	859	133	36,243	142	245	55	3	445
Nevada	29,084	12,705	1,583	143	43,515	46	225	230	5	506
New Hampshire	2,488	13,084	1,237	0	16,809	25	201	106	0	332
New Jersey	8,490	70,108	8,154	0	86,752	39	282	178	0	499
New Mexico	60,018	17,900	1,242	1,769	80,929	108	335	136	70	649
New York	17,266	122,474	20,455	195	160,390	143	603	631	5	1,382
North Carolina	17,146	72,053	8,202	91	97,492	143	236	121	4	504
North Dakota	17,927	9,219	361	294	27,801	121	236	64	12	433
Ohio	11,699	102,308	10,385	0	124,392	132	268	133	0	533
Oklahoma	17,564	39,885	2,375	597	60,421	142	314	101	8	565
Oregon	48,856	31,310	3,205	79	83,450	86	195	90	3	374
Pennsylvania	18,439	132,758	9,735	0	160,932	180	427	146	0	753
Rhode Island	811	11,038	959	0	12,808	20	256	108	0	384
South Carolina	11,006	41,975	3,314	0	56,295	95	285	112	0	492
South Dakota	14,734	9,576	374	871	25,555	106	242	57	27	432
Tennessee	15,618	55,784	4,908	0	76,310	133	285	137	0	555
Texas	130,950	176,808	14,448	13	322,219	349	1,222	681	1	2,253
Utah	20,991	16,742	1,527	433	39,693	38	312	144	7	501
Vermont	1,934	7,085	663	0	9,682	21	201	88	0	310
Virginia	13,024	53,960	7,024	0	74,008	98	196	166	0	460
Washington	29,219	47,244	5,825	1,207	83,495	73	187	120	17	397
West Virginia	7,828	20,533	1,924	0	30,285	46	189	79	0	314
Wisconsin	10,329	60,149	3,591	544	74,613	119	211	58	10	398
Wyoming	44,438	6,683	256	345	51,722	72	346	69	5	492
Total U.S.	1,023,384	2,451,081	247,810	12,618	3,734,893	5,000	15,393	8,388	355	29,136
Puerto Rico	5,801	22,601	3,633	0	32,035	96	244	219	0	559

Table 4. Accuracy and Coverage Evaluation: State Housing Unit Counts<sup>1</sup> by Sampling Stratum

State	Universe					Listing Sample				
	Small	Medium	Large	AIR	Total	Small	Medium	Large	AIR	Total
Alabama	6,600	1,348,000	619,000	0	1,973,600	60	7,900	19,000	0	26,960
Alaska	800	128,000	97,000	500	226,300	20	5,200	23,200	20	28,440
Arizona	6,000	1,126,000	930,000	63,400	2,125,400	20	7,800	44,700	2,600	55,120
Arkansas	4,800	848,000	340,000	0	1,192,800	40	9,600	15,900	0	25,540
California	16,700	6,478,000	5,892,000	34,100	12,420,800	50	45,000	227,600	230	272,880
Colorado	7,300	1,066,000	679,000	5,000	1,757,300	20	8,000	25,600	60	33,680
Connecticut	2,100	821,000	643,000	0	1,466,100	10	6,100	25,600	0	31,710
Delaware	600	203,000	142,000	0	345,600	20	7,200	28,700	0	35,920
District of Columbia	100	101,000	193,000	0	294,100	10	4,800	50,500	0	55,310
Florida	10,100	3,675,000	3,701,000	2,200	7,388,300	50	7,500	50,100	30	57,680
Georgia	8,200	1,783,000	1,457,000	0	3,248,200	70	6,100	30,300	0	36,470
Hawaii	500	160,000	306,000	0	466,500	10	3,000	42,400	0	45,410
Idaho	3,600	373,000	119,000	13,700	509,300	10	8,200	10,900	140	19,250
Illinois	9,200	3,285,000	1,748,000	0	5,042,200	100	8,600	22,300	0	31,000
Indiana	5,700	1,908,000	688,000	0	2,601,700	80	6,100	9,700	0	15,880
Iowa	5,500	1,014,000	245,000	0	1,264,500	120	6,800	9,500	0	16,420
Kansas	12,700	911,000	244,000	700	1,168,400	110	6,400	11,100	30	17,640
Kentucky	6,700	1,053,000	701,000	0	1,760,700	60	7,200	22,300	0	29,560
Louisiana	4,600	1,303,000	603,000	0	1,910,600	10	11,300	24,900	0	36,210
Maine	3,100	471,000	172,000	500	646,600	20	5,800	11,000	10	16,830
Maryland	2,600	1,041,000	1,126,000	0	2,169,600	20	5,300	38,000	0	43,320
Massachusetts	3,400	1,685,000	1,070,000	0	2,758,400	20	6,400	22,000	0	28,420
Michigan	6,800	3,052,000	1,257,000	13,800	4,329,600	50	7,900	15,100	150	23,200
Minnesota	6,500	1,444,000	635,000	15,900	2,101,400	70	6,000	14,000	270	20,340
Mississippi	6,000	848,000	278,000	1,600	1,133,600	40	8,400	11,700	120	20,260
Missouri	8,600	1,675,000	840,000	0	2,523,600	110	5,700	14,500	0	20,310
Montana	7,200	299,000	79,000	23,600	408,800	10	8,400	9,700	840	18,950
Nebraska	8,100	589,000	131,000	3,300	731,400	80	6,800	7,700	70	14,650
Nevada	2,200	367,000	397,000	3,900	770,100	10	6,400	57,800	190	64,400
New Hampshire	1,800	360,000	190,000	0	551,800	20	5,700	15,400	0	21,120
New Jersey	3,300	2,119,000	1,348,000	0	3,470,300	10	8,700	30,100	0	38,810
New Mexico	6,900	498,000	217,000	48,600	770,500	10	9,300	24,800	1,640	35,750
New York	10,700	3,738,000	4,076,000	6,400	7,831,100	80	17,600	124,700	70	142,450
North Carolina	9,600	2,004,000	1,392,000	3,600	3,409,200	100	6,700	20,700	80	27,580
North Dakota	11,700	218,000	59,000	7,700	296,400	100	5,900	9,100	340	15,440
Ohio	8,000	3,116,000	1,773,000	0	4,897,000	110	7,800	24,000	0	31,910
Oklahoma	9,100	1,124,000	402,000	19,100	1,554,200	60	9,000	17,300	270	26,630
Oregon	5,600	867,000	559,000	2,000	1,433,600	10	5,200	15,400	70	20,680
Pennsylvania	12,000	3,999,000	1,481,000	0	5,492,000	110	12,900	22,600	0	35,610
Rhode Island	500	322,000	147,000	0	469,500	10	7,600	18,000	0	25,610
South Carolina	5,700	1,180,000	565,000	0	1,750,700	40	8,200	19,100	0	27,340
South Dakota	8,400	241,000	58,000	18,900	326,300	50	5,800	9,200	450	15,500
Tennessee	9,400	1,574,000	821,000	0	2,404,400	90	7,800	25,400	0	33,290
Texas	28,800	5,090,000	3,010,000	500	8,129,300	70	34,700	148,500	30	183,300
Utah	2,600	480,000	255,000	10,800	748,400	10	9,100	23,900	120	33,130
Vermont	1,600	193,000	94,000	0	288,600	20	5,600	12,000	0	17,620
Virginia	7,400	1,538,000	1,366,000	0	2,911,400	60	5,600	31,900	0	37,560
Washington	6,200	1,360,000	1,050,000	45,200	2,461,400	20	5,600	21,400	480	27,500
West Virginia	4,600	542,000	317,000	0	863,600	30	5,000	13,100	0	18,130
Wisconsin	5,700	1,783,000	542,000	16,200	2,346,900	80	6,200	8,200	220	14,700
Wyoming	4,300	176,000	37,000	9,600	226,900	10	8,700	9,200	90	18,000
Total U.S.	330,200	71,577,000	45,091,000	370,800	117,369,000	2,400	438,600	1,539,800	8,620	1,989,420
Puerto Rico	1,400	680,000	657,000	0	1,338,400	30	7,100	43,400	0	50,530

<sup>1</sup>These are preliminary housing unit counts and will differ from the actual housing unit counts. These counts are rounded to the nearest 1000's, 100's, and 10's as appropriate.

Table 5. Accuracy and Coverage Evaluation: State Listing Sample Weights<sup>1</sup> by Sampling Stratum

State	Small	Medium	Large	AIR
Alabama	112.3	168.8	34.4	18.0
Alaska	100.4	24.4	4.3	20.8
Arizona	428.3	142.9	22.6	-
Arkansas	133.8	87.2	22.2	72.4
California	466.9	144.7	24.7	88.5
Colorado	291.8	129.1	22.8	-
Connecticut	137.9	132.1	25.9	-
Delaware	38.0	29.1	4.6	-
District of Columbia	25.4	22.2	3.9	-
Florida	257.5	491.1	66.7	32.0
Georgia	109.2	287.1	45.8	-
Hawaii	306.2	50.5	7.1	-
Idaho	573.7	43.8	10.3	79.2
Illinois	88.0	378.8	74.9	-
Indiana	61.1	321.0	83.4	-
Iowa	47.5	147.6	30.1	-
Kansas	113.4	136.4	23.8	26.0
Kentucky	110.0	139.9	31.2	-
Louisiana	334.6	110.5	23.0	-
Maine	192.2	76.1	15.9	20.0
Maryland	126.6	193.5	30.7	-
Massachusetts	141.7	249.5	50.3	-
Michigan	130.1	379.9	74.1	82.0
Minnesota	94.3	241.8	45.2	58.9
Mississippi	176.5	98.7	24.4	18.0
Missouri	87.5	288.6	69.4	-
Montana	447.5	36.0	8.1	39.6
Nebraska	93.8	89.5	15.6	44.3
Nevada	632.3	56.5	6.9	28.6
New Hampshire	99.5	65.1	11.7	-
New Jersey	217.7	248.6	45.7	-
New Mexico	555.7	53.4	9.2	25.3
New York	120.7	203.1	32.5	39.0
North Carolina	119.9	305.3	68.1	22.8
North Dakota	148.2	39.1	5.7	24.5
Ohio	88.6	381.7	77.6	-
Oklahoma	123.7	127.0	23.4	74.6
Oregon	568.1	160.6	35.8	26.3
Pennsylvania	102.4	310.9	66.9	-
Rhode Island	40.6	43.1	8.9	-
South Carolina	115.9	147.3	29.8	-
South Dakota	139.0	39.6	6.5	32.3
Tennessee	117.4	195.7	35.8	-
Texas	375.2	144.7	21.2	13.0
Utah	552.4	53.7	10.6	61.9
Vermont	92.1	35.2	7.5	-
Virginia	132.9	275.3	42.1	-
Washington	400.3	252.6	48.6	71.0
West Virginia	170.2	108.6	24.4	-
Wisconsin	86.8	285.1	61.9	54.4
Wyoming	617.2	19.3	3.7	69.0
Puerto Rico	60.4	92.6	16.6	-

<sup>1</sup>Weights are defined for the listing sample only. Final weights for the A.C.E. may be larger due to the A.C.E. reduction, large block subsampling, and small block subsampling.

<sup>2</sup>Not Applicable